IN THE CLAIMS

Please amend claim 1 as follows.

1. (currently amended) previously presented) A method comprising a process for processing a microstructure, said process comprising:

loading the microstructure into an etch chamber of an etch system, wherein the microstructure comprises a sacrificial material and one or more structural materials; and

etching the sacrificial material, further comprising:

providing [[a]] an amount of spontaneous vapor phase etchant recipe to the etch system; ~~so as to etch the sacrificial material; and~~

measuring an amount of a chemical species in the process;

determining a feeding time based on the measurement; and

further etching the sacrificial material by providing an additional amount of the spontaneous vapor phase etchant recipe to the etch system based on the determined feeding time to continue the process.

2. (original) The method of claim 1, wherein the chemical species is an etchant of the etchant recipe.

3. (original) The method of claim 1, wherein the chemical species is an etch product.

4. (cancelled)

5. (original) The method of claim 1, wherein the spontaneous vapor phase etchant recipe comprises a noble gas halide.

6. (original) The method of claim 5, wherein the noble gas halide is xenon difluoride.

7. (original) The method of claim 1, wherein the etchant recipe comprises a spontaneous interhalogen.

8. (original) The method of claim 7, wherein the interhalogen comprises bromine trichloride or bromine fluoride.

9. (original) The method of claim 1, wherein the etchant recipe comprises vapor phase HF.

10. (original) The method of claim 1, wherein the etchant recipe comprises a diluent gas.

11. (original) The method of claim 10, wherein the diluent gas is an inert gas that is selected from N_2, He, Ar, Kr and Xe.

12. (original) The method of claim 1, wherein the step of providing the additional amount of the etchant is performed when a change of the measured amount of the chemical species over time is beyond a predetermined value.

13. (original) The method of claim 1, wherein the step of providing the spontaneous vapor phase etchant further comprises:

preparing the etchant in an exchange chamber; and

feeding the prepared etchant via an outer circulation loop that passes through the exchange chamber and an etch chamber in which the microstructure is held.

14. (original) The method of claim 13, further comprising: opening the outer circulation loop for feeding another additional amount of the etchant into the etch system.

15. (previously presented) The method of claim 1, further comprising: repeating the steps of claim 1 until the measurement of the amount of the chemical species is equal to or below another predefined value.

16. (original) The method of claim 1, further comprising: coating the microstructure with a SAM material.

17. (original) The method of claim 1, wherein the etchant has a pressure from 0 to 15 torr.

18. (original) The method of claim 10, wherein the diluent gas has a partial pressure from 20 to 700 torr.

19. (original) The method of claim 18, wherein the diluent gas has a partial pressure from 50 to 100

torr.

20. (original) The method of claim 10, wherein the diluent gas has a partial pressure from 500 to 700 torr.

21. (original) The method of claim 10, wherein the diluent gas has a partial pressure around 100 torr.

22. Cancelled

23. Cancelled

24. (previously presented) The method of claim 15, wherein the predefined value is 1% of an initial etch rate or an initial surface area.

25. (previously presented) The method of claim 12, wherein the predefined value is 20% of an initial etch rate or an initial surface area.

26. (previously presented) The method of claim 1, wherein the structural materials remain in the microstructure after the sacrificial materials are removed, wherein the structural material is selected from an elemental metal, a metalloid, an intermetallic compound and a ceramic material.

27. (original) The method of claim 26, wherein the elemental metal is selected from Al, Cu and Pt.

28. (original) The method of claim 26, wherein the intermetallic compound is selected from Ti_xAl_x and TiNi.

29. (original) The method of claim 26, wherein the ceramic material comprises a transition metal nitride, transition metal oxide, transition metal carbide, transition metal oxynitride, transition metal silicon nitride, transition metal silicon oxynitride, metalloid nitride, metalloid oxide, metalloid carbide, metalloid oxynitride.

30. (previously presented) A method comprising:

loading a microstructure comprising a structural material and a sacrificial material into an etch

chamber of an etching system so as to remove the sacrificial material;

providing etchant recipe that comprises a spontaneous vapor phase etchant comprising an interhalogen or noble gas halide to the etch chamber over time to etch the microstructure, wherein an amount of the etchant recipe per time unit varies; and

wherein at a first time the etchant recipe is provided at a first amount per unit time, and wherein at a second time the etchant recipe is provided at a second amount per unit time that is a different from the first amount per unit time.

31. (cancelled)

32. (previously presented) The method of claim 30, further comprising:
providing a first amount of the etchant recipe at a first time; and
providing a second amount of the etchant recipe at a second time.

33. (original) The method of claim 32, wherein the first amount equals the second amount.

34. (original) The method of claim 32, wherein the first amount does not equal the second amount.

35. (original) The method of claim 32, further comprising:

providing a third amount of the etchant recipe at a third time, wherein the interval between the first time and the second time does not equal the interval between the second time and the third time.

36. (original) The method of claim 32, further comprising:

providing a third amount of the etchant recipe at a third time, wherein the interval between the first time and the second time equals the interval between the second time and the third time.

37. (original) The method of claim 32, further comprising:
measuring a parameter of the etching process; and

wherein the step of providing the second amount of the etchant recipe is executed based on the measured parameter.

38. (original) The method of claim 37, wherein the parameter is selected from a concentration of an etchant of the etchant recipe, a concentration of an etch product, an etch rate and a surface area of a

sacrificial material within the etch chamber.

39. (original) The method of claim 32, further comprising:

measuring a parameter of the etching process; and

wherein the step of providing the second amount of the etchant recipe is executed when a change of the measured parameter reaches a predetermined value.

40. (previously presented) The method of claim 30, wherein the spontaneous vapor phase etchant recipe comprises an interhalogen.

41. (original) The method of claim 39, wherein the interhalogen comprises bromine trichloride or bromine trifluoride.

42. (previously presented) The method of claim 30, wherein the spontaneous vapor phase etchant recipe comprises a noble gas halide.

43. (original) The method of claim 42, wherein the noble gas halide comprises xenon difluoride.

44. (previously presented) The method of claim 30, wherein the etchant recipe comprises a non-etchant diluent gas.

45. (original) The method of claim 44, wherein the non-etchant diluent gas comprises an inert gas that is selected from N_2, He, Ar, Kr, Neon and Xe.

46. (original) The method of claim 45, wherein the diluent gas has a partial pressure from 20 to 700 torr.

47. (original) The method of claim 45, wherein the diluent gas has a partial pressure is from 500 to 700 torr.

48. (previously presented) The method of claim 30, wherein the structural material remain in the microstructure after the sacrificial materials are removed.

49. (previously presented) The method of claim 30, wherein the structural material remains in the microstructure after the sacrificial material is removed, wherein the structural material is selected from a group that comprises: an elemental metal, a metalloid, an intermetallic compound and a ceramic material.

50. (original) The method of claim 49, wherein the elemental metal is selected from Al, Cu and Pt..

51. (original) The method of claim 49, wherein the intermetallic compound is selected from Ti_xAl_x and TiNi.

52. (original) The method of claim 49, wherein the ceramic material comprises a transition metal nitride, transition metal oxide, transition metal carbide, transition metal oxynitride, transition metal silicon nitride, transition metal silicon oxynitride, metalloid nitride, metalloid oxide, metalloid carbide, metalloid oxynitride.

53. (previously presented) A method for etching a microstructure in an etch chamber, the method comprising:

providing an etchant recipe that comprises a spontaneous vapor phase chemical etchant to the etch chamber over time, wherein an amount of the etchant recipe is varied when a change of a measured parameter is beyond a predetermined value during the etching; and

wherein the amount of the etchant recipe is varied from a first amount to a second amount and wherein both the first and second amounts are not 0.

54. (original) The method of claim 53, wherein the measured parameters is selected from a concentration of an etch product, the concentration of the etchant, an etch rate and a surface area of a sacrificial material.

55. (cancelled)

56. (previously presented) The method of claim 53, wherein the etchant recipe comprises a spontaneous vapor phase interhalogen.

57. (previously presented) The method of claim 53, wherein the spontaneous vapor phase chemical etchant comprises an interhalogen that comprises bromine trifluoride.

58. (previously presented) The method of claim 53, wherein the etchant recipe comprises a noble gas halide.

59. (original) The method of claim 58, wherein the noble gas halide comprises xenon difluoride.

60. (previously presented) The method of claim 53, wherein the etchant recipe comprises HF.

61. (previously presented) The method of claim 53, wherein the etchant recipe comprises a non-etchant diluent gas.

62. (original) The method of claim 60, wherein the non-etchant diluent gas comprises an inert gas that is selected from N_2, He, Ar, Kr neon and Xe.

63. (previously presented) A method of etching a plurality of microstructures in an etch chamber, the method comprising:

collecting data of a parameter during a first etching process for a first microstructure using an etchant recipe that comprises a spontaneous vapor phase etchant;

determining a variation profile of the parameter in the first etch process; and

etching a second microstructure in a second etching process using the etchant recipe based on the collected data of the parameter in the first etching process and wherein the parameter is a detected chemical species during the etch.

64. (original) The method of claim 63, wherein the measured parameter is selected from a concentration of an etch product, the concentration of the etchant, an etch rate and a surface area of a sacrificial material.

65. Cancelled

66. (previously presented) The method of claim 63, wherein the etchant recipe comprises an interhalogen.

67. (original) The method of claim 66, wherein the interhalogen comprises bromine trifluoride.

68. (original) The method of claim 65, wherein the etchant recipe comprises a noble gas halide.

69. (original) The method of claim 68, wherein the noble gas halide comprises xenon difluoride.

70. (original) The method of claim 65, wherein the etchant recipe comprises a non-etchant diluent gas.

71. (original) The method of claim 70, wherein the non-etchant diluent gas comprises an inert gas that is selected from N_2, He, Ar, Kr Ne and Xe.

72-80. (cancelled)